TEACHING

A QUARTERLY TECHNICAL JOURNAL FOR TEACHERS

Edited by
MARGARET BENJAMIN

VOL. XXXIII
SEPTEMBER 1960—JUNE 1961

OXFORD UNIVERSITY PRESS
POST BOX 31, BOMBAY 1

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Editor: MARGARET BENJAMIN

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Editorial

WHAT A DIFFERENCE there is between the geography taught in schools—even in progressive schools—fifty years ago and that which the ordinary teacher is supposed to aim at teaching today. Then, it was no more than a learning by heart of definitions, explained or not, understood or not, strings of names of seas and countries, capitals and chief towns, mountains and rivers, lakes and islands.

Sometimes, however, even these dreary lists of names of distant volcanoes set a poet dreaming, as when Turner sings:

'Chimborazo, Cotopaxi
Took me by the hand'

and

'I stood where Popocatapetl
In the sunlight gleams.'

But what percentage of those weary children in the geography class were poets?

If taught thoroughly, intelligently and honestly geography must create in every child a burning desire to know more of the world and its people, not merely the people of his own land. A habit of geographic thinking should be encouraged from an early stage. Such a habit will remain with the pupil long after he has forgotten all the names and facts which were crowded into his memory. To a great extent it is because the general public is ignorant of geography, and even governments and diplomats know so little geography, that so much has gone wrong with the world.

In order to achieve our aims what should we require of our geography teachers? They must be people with a real understanding of geography. They must have a thorough knowledge of their subject. This seems perfectly obvious; but look around you and you will find that while schools have specialist teachers

for Hindi, English, foreign and classical languages, science, mathematics, art, physical training, and music, only a negligible percentage of schools have qualified teachers trained to think geographically. Principals of schools seem to imagine that anybody can become a geography teacher.

The world is changing fast. Phineas Fogg took eighty days to go round the world, but now it can be done in less than eighty hours and no doubt will soon be achieved in less than eighty minutes! Within the last few months how many new independent states have come into existence in Africa. Though changes in the physical structure of the world are much slower, even so islands have been thrown up from the ocean bed in recent times. Yet most teachers rely merely on such information as they themselves gathered during their school or college days. Let us however not be too severe on them. To keep abreast of new geographic knowledge they must have easy access to up-to-date information. Few schools have an up-to-date economic atlas or world gazetteer, if they have one at all. The country has been divided and redivided, but how many schools have maps showing these divisions? Often teachers have to rely on cuttings from newspapers, but even here they have no systematic method of filing information. No science teacher would be expected to teach without test-tubes and balances, but the poor geography teacher must do without maps, save the apologies for them in textbooks.

The majority of our pupils being poor, the textbooks have to be cheap, and hence they lack good pictures of geographic interest and a sufficiency of diagrams. Old blocks are used over and over. Often the pictures are such that to children who go regularly to the cinema and see newsreels they appear ludicrous.

There are today a fair number of films and filmstrips suitable for use in geography classes. However it is hardly possible even for a school that has the apparatus to borrow them just when they are wanted for the lesson.

All-India Radio gives good talks dealing with various aspects of geography which give a new slant to classroom learning. While some schools make every effort to listen, others make all sorts of lame excuses and deprive their pupils of this added interest in their work.

Geography rooms are mostly to be dreamed of and hoped for in some bright and happier future, though every teacher learns about them. In the present overcrowded conditions of most schools in this country, many which did have this enviable possession have had to turn it into an ordinary classroom.

The aim of geography teaching should be to give our pupils a world sense. However ill-equipped our schools may be, every geography teacher can train his pupils to think of themselves as world citizens. Good geography teaching, while emphasizing the home country, should bring out the interdependence of all countries and peoples. The teacher while showing the differences between peoples can bring out the essential needs and hopes of all peoples and show how they are trying to achieve these. Such a treatment will lead to international understanding, of which the world stands in sore need today.

AMY RUSTOMJEE

Ocean Currents: A Plan for Lessons on Atlantic Currents

'My soul is full of longing
For the secret of the sea,
And the heart of the great ocean
Sends a thrilling pulse through me.'
('The Secret of the Sea'—Longfellow)

LESSONS ON OCEAN CURRENTS and their effects on the activities and well-being of man would come late in the Senior School, although mention of cold and warm currents must inevitably have been made in the later Middle School, and early Senior School, possibly in Standards VII, VIII and IX. In the last-named class currents might be treated in a cursory manner, but it would be in Standards X and XI that the treatment would be full.

Ocean currents could not be disposed of in one lesson—two or conceivably even three lessons might be required if the treatment is to cover all the major currents in the world, and the previous knowledge necessary for successful lessons on this absorbing theme would include a thorough knowledge of the planetary wind systems of the world. This is the first requisite and a *sine qua non*. Next, some familiarity with the fact that the density of water varies with its salt content and temperature is required. Then, and with this fact children will have been familiar for many years, a knowledge of the direction of the earth's rotation is essential.

Teaching Aids

(*i*) Wall Map: A large wall map, preferably one that is bathy-orographical, should be used. Such a map could profitably be mounted on rollers, and would have ocean currents marked on it. Wenschow Relief Maps are perhaps the best available material for the purpose.

(*ii*) Atlases: The teacher should be equipped with a good, modern atlas. Many are available—for to the making of many good books there is no end. The *Faber Atlas*, edited by D. J. Sinclair of the London School of Economics, and with a preface by L. Dudley Stamp, has a comprehensive map of ocean currents in winter. Also, the *University Atlas,* edited by Goodall and Darby, has a map of ocean currents with somewhat unusual colouring. The cold currents have been marked in buff, presumably to avoid confusion with the colouring of the sea. Then the *Advanced Atlas of Modern Geography* by John Bartholomew has an excellent map of currents shown in the conventional red and blue lines for warm and cold currents respectively.

Actually, the more fortunate students might themselves possess one of these atlases. Many, however, would have the *Philips Modern School Atlas* or Meiklejohn's, in which there are maps of currents, and these, though not as large as those in the teacher's atlas, would take on a new meaning with the use of a magnifying glass. After all, this is true of all maps, and many good and reasonably cheap magnifying glasses may now be had.

Influence of the Trades and Westerlies as Impelling Forces

After a brief revision of previous knowledge, in which the teacher would emphasize the east-west trend of the Trades and the west-east movement of the Westerlies, the class would be told that it is the Trades that trigger off the vast movement of water on the surface of the oceans as they drive masses of water from the west towards the eastern margins of the continents, and in doing so they effect a rise of water amounting to 4 cms. in the kilometre. From here, other causes, such as the shape of the continents and the driving force of the Westerlies, convey warm, equatorial water to temperate and arctic regions.

The method of starting a lesson on ocean currents from the currents of the Atlantic cannot be improved upon, and the class would now focus its attention on the middle Atlantic. Lessons on ocean currents must inevitably begin with equatorial currents, as it is the Trades, blowing water equatorwards, that set the whole complex system of currents in motion, as has already been explained. Thus the N-E. Trades blow the N. Equatorial

Current westwards, north of the West Indies, where it becomes the Antilles Current. And south of the Equator the S.-E. Trades drive the S. Equatorial Current westwards, below the West Indian Islands, where it becomes the Caribbean Current.

Effect of the Earth's Rotation

But at this juncture the effect of the earth's rotation on these equatorial currents would be pointed out, by which these westward moving equatorial currents are deflected slightly north and south of the equator. More important than this deflection is the creation of counter equatorial currents. In the case of the Atlantic the counter equatorial current merges with the Guinea Current below the coastlands of West Africa.

Effect of Temperature and Salinity

The class must now know that the causes of the movement of water already given—winds, the shape of land masses, and the earth's rotation—cannot wholly account for the almost mysterious, almost purposeful movement of water. The effect of evaporation makes water more salty, whereas the effect of rain is to 'freshen' the seas again.

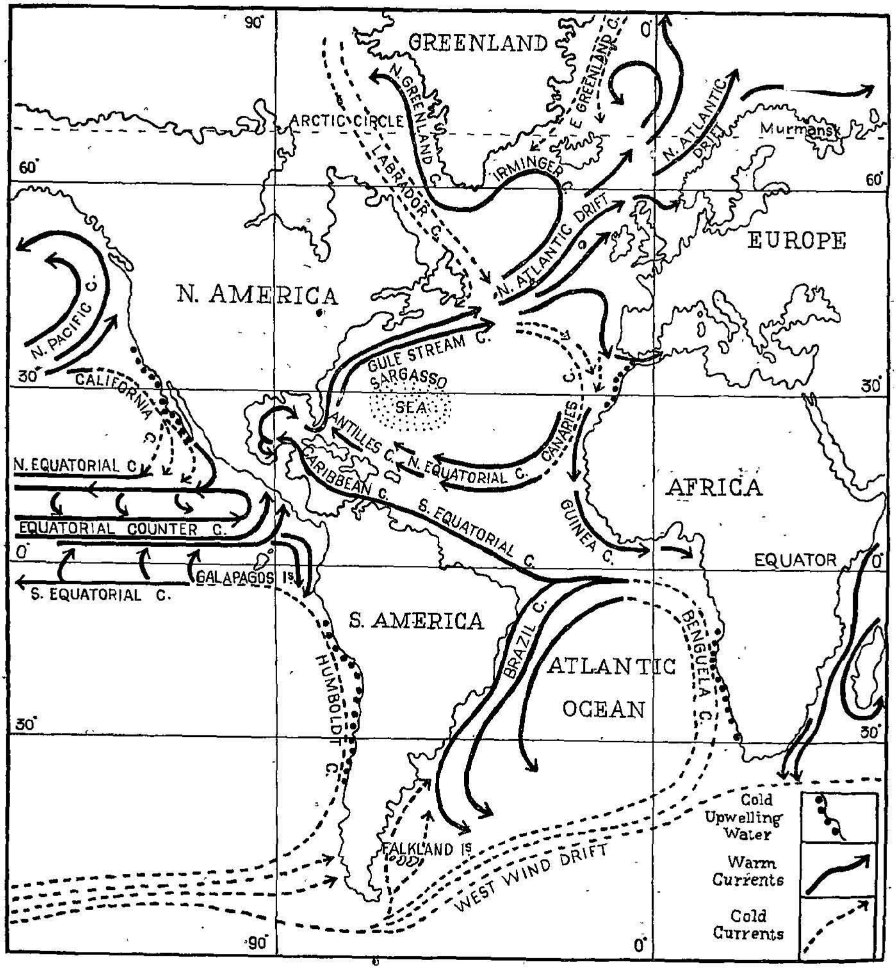
Cold water is denser than warm water, and having a greater specific gravity will sink below it. Something of the analogy of the meeting of cold and warm winds in 'fronts' can be brought out here, as the class will have studied the climatic implications of 'fronts' before this. Cold water, then, will sink to the ocean depths.

Salt water too, is denser than fresh water and so will sink below it. The class will now be told that incredibly enough, owing to the major factors of temperature and salinity, there are movements both on and below the surface of the oceans, along unknown, unseen 'slopes' within the oceans.

Density Currents

Some currents are set up only by differences in density. Thus, in the almost landlocked Mediterranean, where the sun causes considerable evaporation, and where the intake of fresh water from rivers is less than that in the Baltic (where melt-ice also provides more fresh water—which condition is absent in the case of the Mediterranean), a dense salt-water current moves over the submerged sill in the Strait of Gibraltar at a great depth and settles at about 500 fathoms far out in the Atlantic in the vicinity of Bermuda, where the deep water is of the same density. Some correlation with modern history could be made here by telling

the class that during the second World war the Germans made use of this cycle of currents, when they came into the Mediterranean to attack allied shipping in their U-boats on the 'fresh' upper Atlantic current and drifted out, with silenced engines, on the deep, dense, salty Mediterranean current.



THE CURRENTS OF THE ATLANTIC

Currents of the Atlantic: The Gulf Stream

If the Atlantic affords examples *par excellence* of the world's ocean currents with their clockwise swirls in the N. Hemisphere and anti-clockwise swirls in the S. Hemisphere, then obviously the Gulf Stream is the *pièce de résistance* of all Atlantic currents.

as it moves from the warm shores of the Gulf lands to the Arctic coasts of N. Norway and beyond. Its movement can easily be traced by students, since the Atlantic is a relatively 'confined' ocean, bounded on east and west by large land masses.

The class would then be told that the Gulf Stream is the most important current of the Atlantic, and that in geologic ages long past this current must have swept into the Pacific Ocean when the Americas were not joined by the Isthmus of Panama, but that now, as it enters the Gulf of Mexico through the Yucatan Straits, it is made up of the S. Equatorial Current and the Caribbean Current, and is reinforced by much surface water piled up in the Yucatan Straits and the Gulf by the N.-E. Trades.

Ideas of Sea-Level Upset

So much water is piled up in the Gulf of Mexico that the level of the sea there is actually higher than that in the open Atlantic beyond the southern tip of Florida. Also, along the surface of the current itself there is a further variation in level, as, by virtue of the earth's rotation, surface water is piled up on the right side of the current; so that at Cuba, for instance, the level of the sea is 1½ ft. higher than it is on the bordering Gulf lands. Thus when it enters the open ocean beyond Cape Sable in Florida, it actually flows ' downhill '!

The current then closely follows the line of the Continental Shelf of the N. American mainland, swinging out to the open sea after it leaves Cape Hatteras, the last of the four perfectly chiselled capes that it has obviously formed by its swirling eddies.

Mariners in centuries gone by regarded the Gulf Stream as a 'river in the ocean'. This 'river' is like no land stream, for its warmth is felt up to a depth of a mile below the surface. It is true it does not flow as swiftly as it once did—at 6 m.p.h.; now it moves at a rate of 3 knots. But its identity as a warm current is clearly perceptible for a distance of about 95 miles from one edge to the other.

Character of the Gulf Stream

Warm water is blue, almost an indigo blue in parts, while cold currents are a bottle green. Thus one may clearly discern the blue Gulf Stream current in the Atlantic. At this juncture the class might well be shown Winslow Homer's realistic painting entitled, ' The Gulf Stream ', in which ' a lone survivor, groggy from storm and weak with hunger, lies on the deck of his battered sloop. Mast, rudder, hatch, have washed away, and circling

sharks are waiting for him to slip off the sloping deck. . . .' This picture, the original of which is in the New York Metropolitan Museum of Art, clearly brings out the idea of the colour of the Gulf Stream waters. These variations in colour are best seen where a cold polar current, composed chiefly of melt-ice, meets a north-moving warm current, as in the case of the cold Labrador and the warm Gulf Stream.

New Ideas about the Gulf Stream

The idea that this mighty N. Atlantic Current is a single stream of water is now being revised, for the best-informed modern opinion considers it to be made up of four separate currents much narrower than the single stream that issued from the Florida Straits. These four narrow currents are separated by winding, ever-changing, eddying currents.

Again, in recent years it was thought that the Gulf Stream was moving northwards towards Iceland, abandoning the course it had followed through ages of known time. This 'discovery' of certain North Sea fishermen was fortunately found to be incorrect. Had this been the case the lands of western Europe would have suffered from the rigours of far more severe winters and far less tolerable summers; for it is the planetary winds blowing over warm currents, in this case the South Westerlies blowing over the warm Gulf Stream, that transport relative warmth to the lands of Western Europe.

Climatic Implications of Currents: The Winter Gulf of Warmth

This warm effect is felt in the seas up to the north and east of the north Russian port of Murmansk, well above the Arctic circle in the Kola Peninsula. It keeps icebergs and pack-ice away from these regions, which remain ice-free all the year round in contrast to conditions that prevail at Archangel, at 64°40′ N.—or somewhat below the Arctic Circle.

At this point the teacher might correlate further with modern history by telling the class that it was this warming effect of the Gulf Stream Drift that enabled Britain 'to deliver the goods' to her ally Russia during the second world war, approximately once a fortnight even in winter, even though by doing so her fleets ran the gauntlet of lurking German submarines and warships in the sheltered Norwegian fiords, and of aircraft in the airfields beyond.

The students must realize that currents affect the climate of lands indirectly through the prevailing winds that blow over them, and thereby transport their warmth onshore. Thus the

British Isles and N-W. Europe have relatively milder climates than lands in corresponding latitudes in N. America over which the Westerlies are offshore, land winds. This is of course most true of the continental interiors and eastern margins where the cold Laurentian type of climate prevails.

Effects of Cold Currents on Deserts

Off the north-west and the south-west coasts of Africa there are what are known as 'cold water coasts'. The class may be asked to venture an explanation as to what is meant by 'a cold water coast'. Here hot deserts reach the coasts: in the north-west it is the Sahara and in the south-west it is the Namib. Cold water wells up from the ocean deeps when surface water in both the Canaries and Benguela Currents is blown away by the prevailing Trades in each case. Also, there is an upwelling of cold water nearer land. Fogs that form offshore by intense condensation over the cold water are blown for varying distances inland by local sea breezes, but here they are subjected to a dual desiccation. It is conceivable that some students will be able to say what these desiccating forces are, namely, the drying effects of solar insolation and also terrestrial radiation; and so the fogs and clouds are eventually dissipated and no precipitation takes place. Thus cold water currents are a contributory factor to the existence of deserts on the north-west and south-west margins of continents in the trade wind latitudes. Students would probably expect quite the reverse to happen.

The Human Response: Currents and Fishing

Currents carry oxygen for marine life. They may also carry seeds and are thus agents of seed dispersal. Currents aid navigation. Some of the world's richest fishing grounds occur where warm and cold currents 'meet'; and even if most fish prefer warm water as their habitat, cold water, such as cold currents and cold upwelling along the coasts of Morocco, Angola and S.-W. Africa, provide the necessary minerals to sustain the diatoms and minute algae that indirectly feed fish. Again, rich fishing grounds occur off the shores of Newfoundland where the cold Labrador meets the warm Gulf Stream. But here extremely dense fogs, that sometimes last for 70 days, are caused as the Gulf Stream, warm and vast, enters the cold regions of melt-ice in the N. Atlantic. These fogs caused by intense evaporation and condensation jeopardize fishing and shipping, and the small two-man dories launched from trawlers have to be careful to avoid being run down—but radar helps in these cases.

Clockwise Circulation of the N. Atlantic

All currents when they lose speed become drifts. This happens to the Gulf Stream at about 45°W. But when it emerges from the Florida Straits it moves 65 miles a day and has a temperature of c.84°F.—but this it does not retain. The students would be told that this drift breaks up. One major branch travels north-westward past the northern shores of the British Isles towards the Arctic regions of Norway, and the other, moving to the latitudes where the N.-E. Trades prevail, becomes the Canaries Current and is driven equatorwards by the Trades. This is a cold current. The students should at this stage be able to give a reason for this. That is that when surface water is blown away by the N.-E. Trades, there is an upwelling of cold water from the ocean deeps.

The clockwise circulation of N. Atlantic currents is completed when the Canaries Current merges into the N. Equatorial Current. Before proceeding to the currents of the S. Atlantic the teacher might elicit from the students why the circulation is clockwise in oceans north of the equator.

The South Atlantic

The class should therefore be able to say why the circulation of currents in the S. Atlantic is anti-clockwise. Much information will, in a like manner, be elicited from the class. They should know that the S.-E. Trades blow surface water equatorwards from the regions of c.30°S., producing the S. Equatorial Current, which, encountering the shoulder of Brazil, is deflected along the E. Coast of S. America as the Brazil Current until it reaches the realms of the N. Westerlies. From here it is in the main driven eastwards. In its easterly movement this water receives a big impulse from the West Wind Drift, that sweeps the southern oceans in its almost unimpeded course from west to east, driven endlessly through space and time by the twin forces of the N. Westerlies and the earth's rotation.

The W. Coast of Africa now impedes the flow of some of this cold water eastwards, which thus flows northwards and is cooled further by the blowing away of surface water by the Trades and a consequent upwelling of cold water from the ocean deeps. This is the Benguela Current.

Application

Application could include questions on currents as they affect climate—such questions have many interesting ramifications.

Other questions could be set on how far ocean currents impinge upon man. A purely academic treatment of the subject might sometimes be required of students in Standard XI or in the higher school certificate class, but even here the human effect should never be ignored.

The teacher would naturally insist on fully-labelled sketch-maps which would not be elaborate but explanatory in themselves, and to the text of their answers. Colours in sketch-maps need not be ruled out. Coloured pencils do make a difference when colours are placed in juxtaposition to ink.

Concluding Remarks

Numerous interesting facts of this important subject will appeal to the teacher, whose problem will be: 'How much may I exclude with safety?' Not: 'How much can I include?' For example, in the Indian Ocean, the currents north of the equator follow the changing monsoon winds and so are different from those of other oceans. The Bay of Bengal and the Arabian Sea, with the peninsula of India in between, plan, as it were, a régime of their own. And if the Gulf Stream moves as a powerful force through the waters of the N. Atlantic, larger in its flow than many hundred Mississippis, then in the Pacific, old cradle of the moon, as some have considered it, the Kuro Siwo giant-wise sweeps the vast reaches of the largest ocean, with a volume that has been estimated as being 5,000 times that of the Mississippi.

Then there is the romance of the *Kon-Tiki's* voyage across 4,300 miles or more of the Pacific, as it was blown by the S.-E. Trades along the S. Equatorial Current in an attempt by those who manned her to vindicate a debated theory. Then there are the Galapagos Islands, rich storehouses of the past, with their curious anomalies of fauna and fabulously rich deposits of guano. Their situation on the verge of the cold Humboldt Current, where it touches the equator, affords much interest to the geographer.

There is all this and more absorbing material for teaching and study, so that, at the end, the cry is always: 'How much can I tell?' Not much compared with what the youthful, questing seeker might independently cull of the mystery of the moving seas.

A. L. Glynne-Howell

The Need for a Geography Room

MENTION THE NAME GEOGRAPHY ROOM to the headmaster of any school and ten to one the look one gets seems to say: 'What nonsense! No one requires a separate room to teach geography.' It is unfortunate that this important subject should receive such step-motherly consideration, for there is no denying that if the subject is to be taught successfully, it must be done in the proper atmosphere, which can only be acquired by excluding all extraneous material from the room in use. By and large the subject itself is usually treated with small respect owing perhaps to the fact that pupils find it comparatively easy to pass in it. Such being the case, it is natural that a teacher is expected to make do with whatever is available without asking for special arrangements and apparatus. Nothing could be further from the truth. Is it any wonder then that most school-leaving children have nothing more than a bookish, superficial knowledge of the subject? Like science, geography has much within its scope that cannot be adequately handled by utilizing a classroom where other subjects are also taught. Too long has this subject been considered a 'general' one, thereby denying it its special characteristics, and, of course, a separate room. Now, as never before, does geography require a well-equipped laboratory. In the ensuing paragraphs I shall try to clarify the dire need for a Geography Room in every school, and append a simple plan for setting up one.

Five Reasons for having a Geography Room

Broadly speaking there are five basic reasons why there ought to be a Geography Room:

(1) *Atmosphere.* Geography is an inspirational subject, and as such must be taught in an air that arouses interest, stimulates the imagination, and inspires. I cannot understand how any teacher who is really devoted to this subject can remain content to teach it in surroundings that are anything but 'geographical'. One might as well approach biology or chemistry with non-existent experiments that have been described verbally but never actually demonstrated. It just can't be done. Yet it *is* done in geography. Having a room set apart for the subject, and reasonably well equipped, is half the battle won. When children enter such a room, the sight of the various apparatus, maps and pictures is enough to arouse their interest; for is there a child who is not by nature curious to know more about something he sees for the first time? And is not this a truly psychological approach which takes full advantage of a child's curiosity? Here then is an opportunity for even an average teacher to exploit. A

subject that can often deteriorate into a glorified lesson in literature is at once saved from this abyss, while the pupils react in a manner that is sufficient to warm the stoniest heart. So, for the sake of the right atmosphere, let schools have a Geography Room. In one school that I know of, the pupils look forward to their geography lessons with an enthusiasm generally unheard of elsewhere, simply because it means another forty minutes in the Geography Lab (as it is here called).

(2) *Time-saving.* This point is, perhaps, self-explanatory. However, I think it would be proper to elucidate a little further. If a Geography Room is correctly set up and maintained, a teacher can locate a required map, model or picture within a few seconds. In most schools where geographical apparatus (including charts) is stored in a room common to other subjects, it is almost impossible to lay one's hands on a much-needed teaching-aid, simply because there is a merry mix-up. Teachers frantically wade through mounds of other material before locating what is wanted; and more often than not they do not find the article. And all this time the class is waiting—not too patiently either! Such would not be the case if a separate room were provided. In addition, there is the danger that apparatus might be unknowingly manhandled, as a result of which a loss is incurred. After all, teachers too are human! Now all this could be avoided by having a room used exclusively by geography teachers. It saves time, money, and frayed nerves!

(3) *Safety of Apparatus.* Wherever the subject has to be taught in an ordinary classroom, at some time or other it becomes necessary for the teacher to bring from elsewhere such apparatus as a globe, projector, or epidiascope. As careful as one might be, there is always the hazard of the apparatus being accidentally knocked over. In a Geography Room this is minimized to a large extent for movement is reduced—a distinct advantage and a sound argument in favour of having a separate room for the subject.

(4) *Special Facilities.* Geography, if taught competently by a dedicated teacher, will involve a large amount of work which cannot be adequately undertaken in an ordinary classroom. This happens because in all cases the teacher and the pupils find it necessary to use materials and apparatus which cannot be conveniently stored in the usual class cupboard. Such being the case, the teacher does not include this work in his normal syllabus, either because it is impractical to convey the apparatus whenever required or because there are insufficient storage facilities in the classroom concerned. In both cases it is the pupils who lose. The work I refer to includes:

(i) The drawing and constructing of maps, diagrams, etc. from material supplied.
(ii) Consulting large-scale maps, charts, plans, working models.
(iii) Observation of specimens.
(iv) Modelling: an essential part of the syllabus, if the subject is to be real to the children.

Many readers will probably argue that a great deal of the work mentioned here can be done in the classroom. To them I say: 'Yes. But is it the right approach to geography?' A century ago, science too was treated this way, till practical experience proved that a laboratory was the right place to impart scientific knowledge. It is time for all schools to realize that the same applies to geography.

(5) *Proper Storage.* One has only to visit a school that does not have a Geography Room to realize the importance of this point. In the majority of cases, whatever geographical equipment there is, is haphazardly tucked away in a shelved cupboard or else is left on a so-called map-stand. More's the pity. It is no wonder then that every new academic year sees a fresh order for maps and charts being placed. Much of this could be avoided by providing a separate room for the subject. In addition to the economy gained on a reduction of orders, it must be remembered that there is a right (and a wrong) way to store geographical equipment. Ask any science teacher and you will get the same reply regarding scientific apparatus. Unless one has facilities for this, how can the equipment be correctly stored and maintained? So let's have a Geography Room—even if it is moderate in size, and equipped with the bare essentials only.

A word might here be said about the location of such a room. If possible it ought to be a corner room, but situated where there is ample light. Any dark, dingy room, unwanted by others, should not be accepted. After all, no physical education teacher or science teacher would dream of doing his work in such a place. So why should it be expected of a geography teacher?

I have dealt at length on the need for such a room, and can only hope that the headmasters who read this will be influenced to the extent that, in the next plan for improvements in their schools, they will endeavour to provide a good Geography Room.

I now append a simple plan for a Geography Room (p. 16).

Notes on the Plan

(1) In addition to the wall blackboard, there should be a movable squared blackboard for drawing graphs and diagrams,

and for drawing outlines of continents from stencils. The map-stand should be light enough to be moved easily.

(2) A picture rail runs just above the tops of doors and windows, all round the room, except for the whitewashed patch which serves as a screen for projecting pictures.

(3) Lower, there should be two battens, about 14 inches apart, used for displaying pupils' drawings, maps, etc. The exhibits should be mounted on cardboard or thin plywood.

(4) There should be some quick and easy method of darkening the room when it is required for projection purposes. Perhaps spring blinds (black) could be installed. The walls should be colour-washed, except for the white patch on the South wall.

(5) The map cupboard should contain about 40 maps on rollers, hooked above and below, hanging diagonally, so that titles are clearly visible. The globe might be placed on top of the cupboard.

(6) No hard and fast rule can be laid down as to what the apparatus cupboard should contain: much depends on what the teacher requires for the particular course being followed. However, the following are suggested: orrery, mapograph, wire globe, circular blackboard protractor, and ruler (2½ft. long), small stencils for drawing outlines of continents in exercise books of pupils, tellurion, celestial models, simple survey instruments (tape and chain, drawing boards, poles, plane table, prismatic compass).

(7) An electric plug-point, water-tap and sink might also be installed.

(8) The projector cupboard should be used for storing: the 16mm. sound/silent machine; the 35mm. filmstrip/slide projector; the epidiascope; films (in cans), slides, pictures; also spare parts, lubricants, soft linen for cleaning the machines, useful tools (screw-driver, hammer, pliers, wire-cutter).

(9) A cupboard for reference books may be omitted if the school library has a separate geography section.

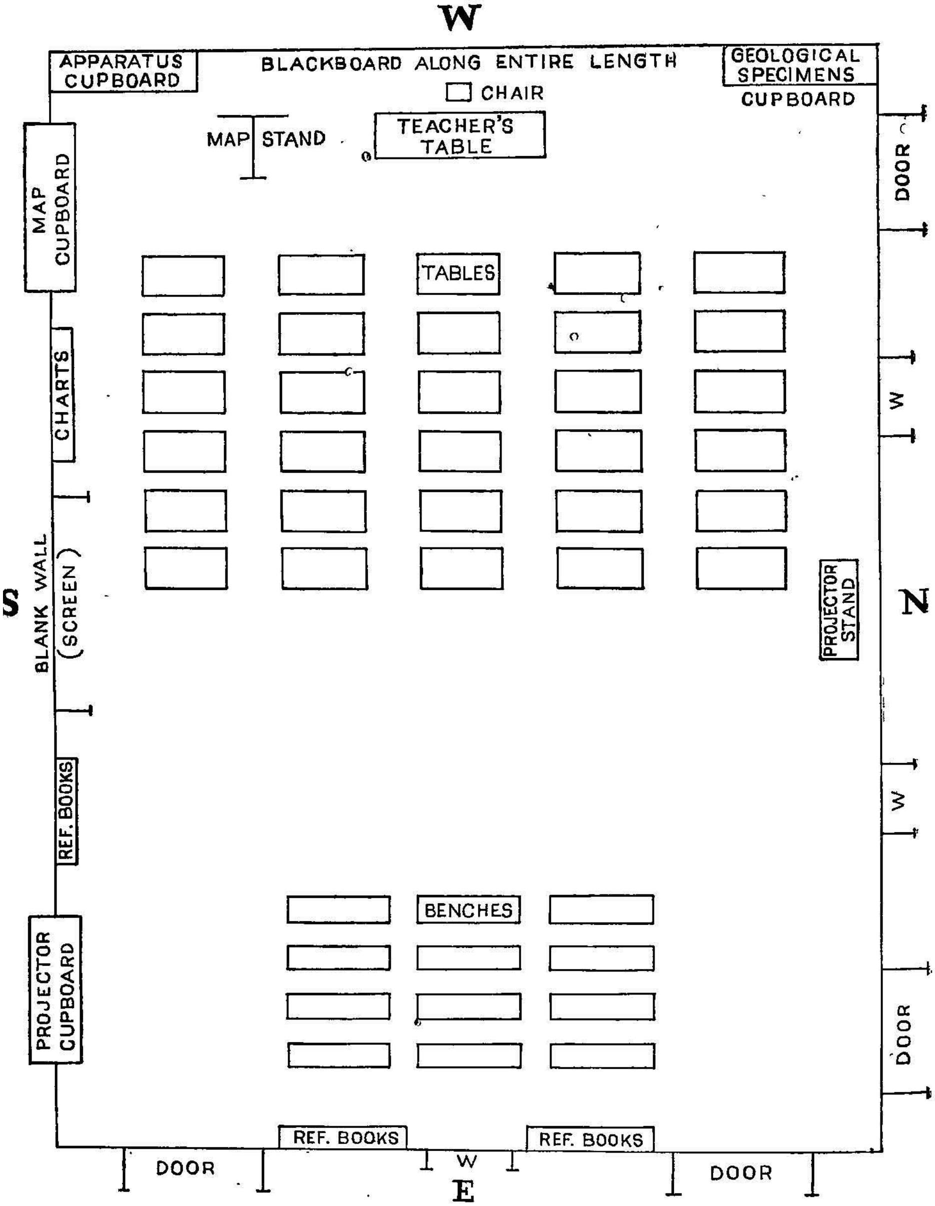
(10) With regard to the furniture, the following may be of use: pupils should have tables and chairs, not desks; the tables should all be of one size to enable them to be placed together to form one large table for studying large maps or for group work; several strong, flat, glass-topped tables (with electric light fitting inside for tracing) containing large drawers to hold maps, may be provided; the teacher's desk should contain a tracing table.

(11) Some provision for weather observation and recording should be included.

(12) In using the Geography Room, the pupils should be drilled to use one door for entrance and another for exit. This is particularly important when consecutive periods are taken in the room.

The above plan is by no means complete or beyond criticism, but it will probably be sufficient to start with and can later be modified to suit special requirements.

A. C. McPhail-Luke



Plan for a Geography Room

The Place of Maps

To many boys and girls mapping is easily the most interesting introduction to geography. The reason may be that it is practical. There are no long lists of names to be learnt and no difficult theories to be understood. Once a few fundamentals are grasped, map-work is a branch of geography in which the pupil can to a large extent teach himself.

History may not be all 'chaps' and geography all 'maps', but in the discussion of any geographical topic maps are necessary in order to indicate position, relative distances, and area. Without maps there can be no accurate imagination and comparison, and without imagination and comparison, the study of geography has no value.

If at the end of the school course pupils can read and use maps—not merely the simple maps to be found in school atlases and textbooks but the larger and more detailed ones which are used in everyday life—and take pleasure in consulting them, their teachers may consider themselves very successful. Thus a properly graded course in maps is an integral part of the geography course.

The First Map

The child's first 'map' may be of things he sees around him every day in class—his own desk and chair, the class cupboard, the teacher's desk, the blackboard, the flower vase. These maps will therefore take the shape of rectangles, squares and concentric circles. At this stage the difference between a picture and a map should be stressed. Later, a map of the classroom with all these objects filled in could be attempted. Incidentally, this map of the classroom should be called a 'map' rather than a 'plan', because otherwise the child might consider his next map as something new and unknown to him.

The children could have a little fun over the map drawn by the teacher on the blackboard. A child could be asked to mark his own place on this map. Some others may be asked to chalk the way they follow to reach the teacher's desk. Another could mark the window that is closest to him or bring objects which are found in places marked with a cross, and so on. The boy whose desk is marked with a cross may be asked to place a map on the floor in such a way that the direction on the map coincides with the floor plan. Many variations of these games could be invented by the ingenious teacher.

This common map-notion of the child should be further developed and directed. The drawing of a map of the neighbouring

room could follow. An idea of directions is essential, and an arrow to show North should be drawn, but as these are the child's first maps they need only be approximations to scale. The only thing that should be mentioned is that as more is to be put on a sheet of the same size as before, everything should be made smaller.

The study of direction can take the form of simple team games. Following simple instructions of pointing to given directions, naming articles and classrooms that lie in certain directions, shutting windows that lie in one direction, standing in certain corners, kneeling in others, rubbing noses with children and sitting in certain corners, not only give great enjoyment to the children but also provide ample practice, thus helping to fix directions in the minds of the young.

Taking the children for an actual flight over the school building and its surroundings would be a wonderful approach to map-making of the school and its vicinity, but unfortunately this ideal method is not within our reach.

All the same, the idea of going for a flight in an aeroplane and watching the earth below will surely appeal to the children's imagination. If their interest is once aroused, the introduction to the idea of such a map can be easily made. The pupils could be asked to draw a picture of their school building and its surroundings, including any well-known landmarks in the vicinity, as they think it would appear from an aeroplane.

'From School to the Nearest Post Office', or 'My Way to the Bus-stop', or 'How I Come to School' (for a pupil who stays in the vicinity) could be very well illustrated by individual pupils in little maps.

Occasionally the whole class could jointly map something on the blackboard: the route they would follow to reach a stationer's at the corner, for example. With the teacher's help, roads crossed, buildings on the way, the traffic signals, and statues of important personages, could all be marked by simple symbols. Thus a few conventional signs for roads, bridges and temples could be introduced into the esson.

Simple Physical Maps

After a couple of lessons with the globe whereon the children notice the relation of their country to the continent and the world, they may be helped to read simple physical maps.

At first sight the map may appear a maze of complexities, but soon the pupils start to regard it as a challenge, a new puzzle which becomes more fascinating each time they look at it.

A knowledge of scales now becomes necessary. The pupil should understand that if the map of a classroom is being drawn, you may use a 1 inch = 4 feet scale, but that a map of the vicinity would require a 1 inch = $\frac{1}{8}$ mile scale, and in the case of a map of a continent the scale may be 1 inch = 500 miles.

This is an age at which pupils love to collect pictures. Picture-maps can therefore be used to advantage at this stage. An outline map of India, for example, may be used and the most important features represented by pictures. Appropriate illustrations of trees, animals, cultivated crops, people and their homes can be cut out and pasted on the map. The pasting of actual agricultural products such as grain, cotton or tea on the map may be an age-old method, but is still very popular and can be followed to advantage. From such simple picture-maps the next step is to a simple and brightly coloured physical map. Colour pencils are very handy for this purpose. The lowlands are represented by green, the uplands and the intermediate areas by yellow, and the mountains by brown.

Mapping of known things should precede that of things unknown and maps of areas should precede those of lines. Mapping of mountainous areas, for example, should come much before isotherms, isobars and contours. Sometimes children repeat parrotwise that 'the 80°E passes through the Deccan' without in the least understanding what this means. To make sure that the pupils have grasped the fundamentals, short questions on the map could be asked. These are answered in a spirit of fun, as a child loves to be the first to find the correct answers.

1. If you were to go from Bangalore to Madras, would the journey be up-hill or down-hill?
2. 'The plain of the western coast is broader than that of the east.' Is the statement true or false?
3. Point out two high hills in South India.
4. Which of these mountain ranges is higher, the Kirthar or the Aravalli? Why?

These are only a few of the many questions that pupils can answer with their knowledge of the significance of major colours on a map.

At this stage the chief point to make clear to the children is that the 'top' of a map is usually the 'north'. By this time 'top' and 'bottom' should be dispensed with altogether in relation to maps. A living interest in directions can be created by bringing a large-sized compass to class. The pupils could be allowed to examine it. The major points of the compass and the directions of given objects in class can be found. This work should be

supplemented with stories of the importance of the compass to travellers lost in the desert or to sailors at sea.

Map-making in the Senior School

What sort of maps are the senior pupils expected to make? No experienced teacher will advocate the map-making exercise in which the pupil reproduces printed maps down to the last minute detail. Girls in particular tend to spend far too much time in drawing elaborate and artistic maps which are painfully neat. Such maps may be a useful standby for exhibition when there are visitors in school, but they defeat their own purpose, for the pupils get so absorbed in the artistic side of the work that its geographical aspect is forgotten.

In the upper classes, diagrammatic sketch-maps are at all times to be preferred to detailed maps. Pupils should be able to express themselves in maps, a form of geographical shorthand. These sketch-maps should be drawn rapidly and boldly and be as simple as possible. Too much stress should not be laid on small indentations of the coastline. Is it at all necessary for a pupil to memorize the coastline or the boundary of a country? Since the atlas has far more information than any child can possibly remember, a sketch-map should emphasize only the salient features. A rainfall map of India, for example, may show a large number of isohyets all over the country: perhaps isohyets for every 5 to 10 inches of rainfall, but the simplified sketch-map need only show the really significant lines for 20, 40 and 80 inches.

Pupils should not spend hours in copying the outlines of the continents under study. Good outline maps are available at a cheap rate in the market. These could be used to advantage and the children could fill in the required details. Such map-work should be followed by practical exercises providing opportunities in making geographical conclusions. As soon as the physical facts regarding condensation have been learnt, the pupils may be set to work at a simple set of exercises to determine relationships, e.g., In June, is the air over the Arabian Sea about the same temperature as the air over peninsular India? Under what conditions will the on-shore winds drop their moisture? Are there any highlands which will act as barriers and force the moisture-laden winds to rise? How will this affect (*i*) the west coast? (*ii*) the Deccan? Such exercises, however simple, give the pupils a chance to think for themselves. Later on they may get so accustomed to the use of this shorthand of geography that it becomes almost second nature with them to illustrate a written statement by means of a map or diagram.

Pupils who are thus trained in attention to detail and in accuracy of thought are on the whole less likely to make blunders in the examination room. 'The Deccan gets less rain because it is to the right of the Western Ghats. The west coast gets heavy rain because rain comes from that side.' Pupils who make such statements are undoubtedly not familiar with reading maps and stating in words the precise information which a map conveys at a glance to the trained eye.

It is extraordinary that a vast number of people never learn to read a map. Most of us have heard of the adventure of three soldiers who lost their way and found what they thought to be a map. They followed the red lines marked thereon, believing them to be roads. We are not told where they landed ultimately, but we do know that their 'map' turned out to be a chart of the blood-vessels of the human body!

The Use of the Globe

As the earth is a three-dimensional body its accurate representation on a flat surface is not at all easy. Sometimes children find it difficult to realize, for example, why flying over the North Pole is the shortest way from Russia to North America. Others wonder how the shortest way from Canada to Japan can be across the Pacific when the two countries seem to be so far apart in the atlas. Such misconceptions on the part of the pupils can best be avoided by frequent use of the globe.

When pupils are being introduced to the study of a country, it is always advisable to show them the relative position of the country on the globe before it is shown on the map. They should be led to realize that the map is but 'the skin of the globe'.

The globe is also of very good use in introducing the pupils to those portions of geography which are concerned with the earth as a whole and its movements in space. If the globe is not used adequately the pupils continue to have a hazy notion concerning latitude and longitude, and about the phenomena dependent on the earth's rotation and revolution, particularly seasonal changes and the varying length of day and night. Again, topics like trade routes by sea and air, which are concerned with the whole world, can be treated much more clearly and accurately on a globe than on a flat map.

True it is that we cannot provide magic carpets to convey students to the various regions of the world, but the globe must carry on its surface, to the mental eye at least, a world of living pictures. We require more than mere statements like 'Rangoon is the capital of Burma' and 'Lahore is situated in the north'.

The name of the place should connote a definite portion of the earth's surface with an entity of its own. In the lower classes these pictures of the world may be faint, but later every detail can be seen with increasing boldness. But always the whole globe is our canvas, the whole world our field.

The printed globes have their shortcomings too. They are usually too small for our classes and merely reproduce atlas maps representing political divisions. If globes showed the various important aspects of geography such as physical features, climate, and natural vegetation belts, their utility value would increase immensely. But since such globes are not available in the market, a slate globe with important parallels and meridians and the outlines of continents marked in white proves very useful to the teacher. Such a globe should have a diameter as large as possible, at least of 12 inches, and should be suspended from the ceiling so that it can be easily manipulated. In schools where there are no special geography rooms, suspended globes are out of the question. In such cases, the teacher has to make the most of the printed globe and wall-maps that can be easily carried from classroom to classroom.

The pupil's attention is less distracted when the geographical features mentioned by the teacher can be readily seen on a wall-map. This is particularly useful in comparative studies. A couple of maps illustrating such factors as physical, climatic and vegetation features could be displayed side by side and essential correlations could be brought out. The simultaneous display of maps of India showing relief and rain from the south-west and north-east monsoons, for example, would provide the teacher with a very effective means of illustrating the climate of India.

Again, on the large-scale wall-map the distribution of rainfall, vegetation, population, etc. is strikingly shown. When the figures cannot be read, the colouring alone is often sufficient to show the main facts. One glance at the population map of Asia, for example, is enough to impress the pupil with the remarkable contrast between the south-east of the continent with its enormous population and the vast, less densely populated north.

It is good to leave a wall-map on view for several days, so that whenever pupils enter the classroom they see the map and thus subconsciously absorb a good deal of the information.

When buying wall-maps, preference should be given to large maps that do not contain too many details and that can be read by pupils at the back of the class. A simple political map with boundaries of states, capital cities and other towns, for example, is to be preferred to an old-fashioned political map on which

the mountains are indistinctly marked by hairy lines which are often rightly nicknamed 'caterpillars'.

It would be very helpful if a map had at its foot a small inset referring to a single geographical factor. If a natural vegetation map of India, for example, had an inset of a map representing the distribution of rainfall in India, good comparison and synthesis could be effected.

Correct Phraseology

Sometimes we teachers make the mistake of thinking that children learn only the things which they are told to learn. We tend to forget that suggestion plays a very important part in teaching. By its size the map is insistently teaching all the time that the things of which teachers speak are very small. Again, maps are partly to be blamed for statements like: 'Ceylon lies at the bottom of India', 'the River Nile flows up into the Mediterranean' and 'the south of India is below the Vindhya Mountains', for by convention, north is placed at the top of the map. Again, unless children are constantly corrected in the initial stages they never learn to use correct phraseology.

Wall-maps may be called 'the tools of the geographer' but are insufficient for teaching since they require only visual observation. Children are more eager to be 'doing' things rather than to be merely seeing things. And do not children learn as much, if not more, by hand as by eye? Drawing of maps gives them an opportunity to exercise their motor faculties and keeps up their interest in this subject with appeals to their adventurous spirit.

The final test of any study of map-making is to see if the students can make their own maps accurately from a given description. If that is expecting too much at the high school stage, they should at least be capable of intelligent reading and interpretation. If the pupils form a habit of 'looking through' the map and seeing the real things that the symbols stand for, they will understand the real meaning of distance and directions.

MANI D. ENGINEER

Geography in a New Age

It is a platitude to say that we live in times of rapid change, times when the tempo of change is much greater than at any period in history. Scientific and technological developments have achieved revolutions in travel, in oral and visual communication, in synthetic substitutes for natural substances, in the harnessing of nuclear power, and in capacities for human and material destruction.

The advent of the scientific age has emphasized the need for increased numbers of suitably trained men and women, and considerable amendments in educational facilities are being made to meet this need. But the demands of a changing world require adjustments in the outlook and content of all work done in school, not least in geography. What are the new factors which suggest that some reorientation and some rethinking may be desirable in education generally?

The increased tempo of life shows not only in the speed with which news is transmitted by telephone and radio but also, more important, in the rapidity with which ideas may be propagated. The printed word is losing its power as a means for the dissemination of ideas and its place is being taken by visual media. The cinema and television are the new vehicles for exporting culture and defining standards of value as well as for conveying information and instruction. Their function is pervasive and all-embracing because they ignore the barriers of language and thereby take a step towards unifying the world.

Interdependence of Nations

The increasing interdependence of the nations of the earth is seen in the increasing transfer of a widening range of raw materials. No country today, not even the richly endowed United States or the Soviet Union, is self-sufficient. India depends on heavy imports of food and raw materials. At the end of 1956 transport in Western Europe was restricted or disrupted for weeks through the cessation of supplies of petroleum from the Middle East, which produces only about 15 per cent of the world output.

The rapid advance in nuclear physics brings with it threats to the well-being of the whole world. Apart from the inconceivable folly associated with atomic warfare, the carrying out of nuclear tests seems to produce results which can have deleterious effects on peoples and organisms far removed from the test site. The radioactive content of the ice laid down in a Swiss glacier in the year of Hiroshima is higher than that for preceding and succeeding years.

Increasingly man is learning to co-operate all over the world. National boundaries have little significance in the operation of

the Postal Union or the Meteorological Service or in the little publicized activities of branches of the United Nations Organization such as the International Labour Office or the Food and Agriculture Organization. Through voluntary effort as well as through the United Nations great strides have been made in the control of the most international visitation—disease. Epidemics can usually be restricted to their sources, infant mortality has been greatly reduced everywhere, and in India during the first half of this century the expectation of life for a man has been increased by thirteen years.

For most people the truth of the shrinking earth is brought home most vividly in the development of astronautics and the speed and safety of air transport. In 1919 Alcock and Brown flew the first plane across the Atlantic; today, only thirty-eight years later, eighty-four commercial planes cross the same ocean every day. More visitors now enter New York by air than by sea, and before long aircraft weighing as much as the first *Mayflower* will be crossing the Atlantic. London is now one of the greatest passenger ports in the world, and from it New Zealand is only forty flying hours away. The launching of earth satellites brings inter-planetary travel within the bounds of possibility.

Preparing a New Generation

Facts like these could be multiplied, and they demonstrate that we have entered a new era in which a narrow, nationalistic outlook must give way to global concepts. As Professor David Linton told the Geographical Association of Great Britain in January 1957: 'Mankind must be made more aware of the world it lives in, its rigorous limitations and its limited possibilities. Above all it must be assisted and persuaded to think of the world as a whole.' Today technological and scientific developments are taking place at an unprecedented speed, increasing man's knowledge of the earth and causing modification in his environment, and since these aspects lie at the heart of all geographical study, the geography teacher must consider actively and immediately what steps he should take to prepare the present generations of pupils for their new responsibilities as citizens of the world as well as of a nation. Attempts might be made on a threefold task:

1. To ensure that pupils leave school appreciating and understanding ideas and facts about the geography of the earth as a whole.
2. To see that they have had opportunities to think about and discuss the geographical problems involved in a global outlook—the 'rigorous limitations and the

limited possibilities' which the earth imposes upon mankind.

3. To ensure that pupils leave school aware of the pitfalls associated with the popular dissemination of information and ideas, and know where they can secure accurate facts.

This gives rather a different slant to the geography we teach, particularly, perhaps, in the last year of the secondary course. It is 'applied geography', geography for use, the geography which we hope will be employed by pupils for better understanding of the modern world and the part they are to play in it.

If this is so then consideration must be given to the content of the geography to be taught and the method of teaching it. Some years ago M. C. Nokes in his book *Science in Education* was courageous enough to suggest that there were five fundamental aspects of science which every educated person in the country ought to know something about. Similarly, may we venture to suggest that every citizen should be sufficiently educated geographically to understand something of the following five aspects:

1. The distribution and growth of the population of the world.
2. World food resources, standards of nutrition in different regions, and the geographical aspects of disease.
3. The distribution, exploitation, and transport of raw materials.
4. Power resources, present and potential.
5. World transport systems and their relationship with India.

Such a list may shock the academic geographer for it contains no mention of the basic aspects of the subject such as geomorphology, climatology, and the regional concept. But in proposing these aspects there is no suggestion that the fundamentals be neglected, rather that they will be brought out all the more strongly by being *applied*.

The Human Angle

By way of example let us consider the geographical background to the problems which underlie Egyptian economy. To arouse interest, we start from the human angle—the Egyptian peasant, what he is like, and the kind of work he does. Then we should note that there are twenty-two million people in Egypt, which gives a density of 1,500 a square mile. The amount of cultivated land per head of the population is 0.28 acres. Egypt has few resources other than the land and the labour of the people, and, while the sale of the chief commercial crop—cotton—

permits purchase of some foreign wheat, most of the country's subsistence depends on home-grown food. The average daily consumption of food per head amounts to 2,340 calories, which is fifty calories below what dieticians consider a basic minimum for those climatic conditions. The people therefore are under-nourished, and the situation worsens progressively because the population increases by half a million every year. The essential need, therefore, is for more food either from at home, which means more land under cultivation as well as better yields from the existing crop-land, or from abroad. Here the normal features of Egyptian geography, its structure and relief, the soil and hydrology, the climate, are relevant. More cultivated land waits on more water for irrigation, additional control of the Nile, and improved methods. Here is regional geography but with a new slant which stresses the world relationships of the region.

'Resources' geography has long been a feature of school courses, but in the new approach it would be treated from a global and not a regional viewpoint. Suppose the subject were 'petroleum'. The aspects which could receive attention might be the *relative* significance of the chief producers shown graphically, the situations and geographical features of the producing areas, the requirements of consumers and the chief importers (Figure 1), means of transport by land and sea, oil-refining, industrialization, standards of living, and other sources of power. Much variation is possible here, but the aim would be to present a world picture, not a regional one.

The Air Age

The aspect of global geography which calls most obviously for inclusion is 'Air Transport', a very big subject which cannot be fully considered here. For purposes of illustration let us take two facets of the topic:

1. The Location of Airports.
2. The Orientation of Routes.

Features which might be included are:

1. *The Location of Airports*: The nature of the terrain, size of airfield relative to the type of aircraft, situation with regard to great cities, climatic aspects, altitude and atmospheric pressure relative to length of runway, sources of fuel, contributing means of transport, etc.

2. *The Orientation of Routes*: The air has no geographical frontiers, the troposphere and stratosphere, purpose (freight and passengers), limitations, choice of routes, great circle routes, intermediate land/sea surface, meteorology, etc.

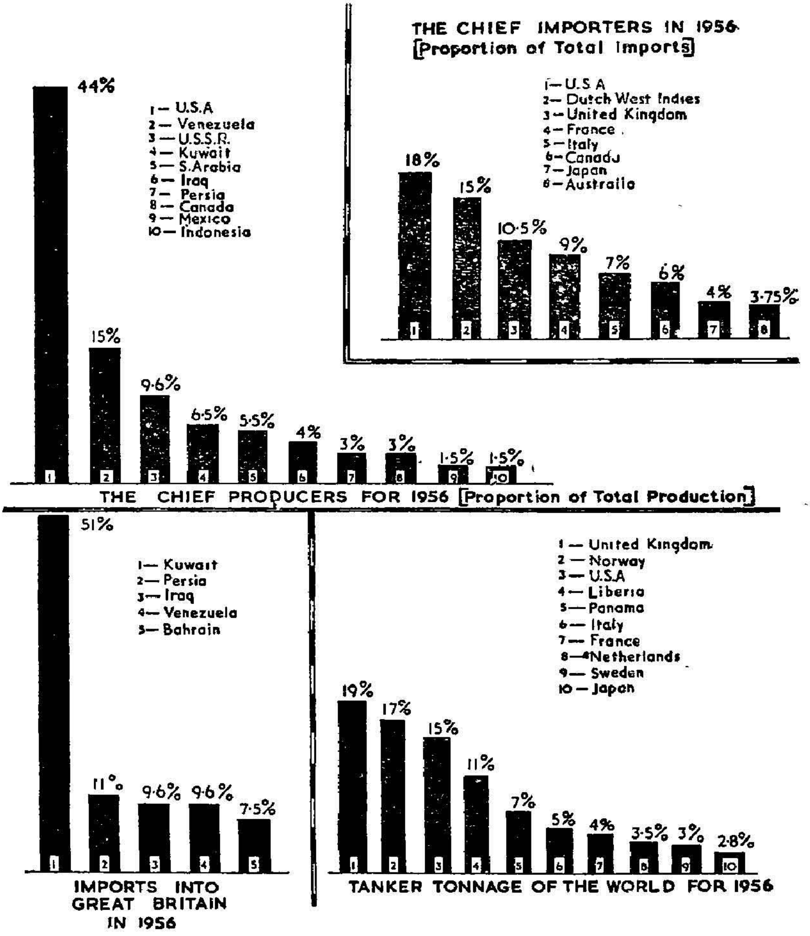


Fig. 1. Some Facts about Petroleum

The second example is of importance because it brings again to the fore the need to employ the globe and not the atlas map, in the classroom. It emphasizes too the changed significance of some parts of the earth. The North Pole lies on the direct route from Copenhagen to Tokyo, the Arctic Ocean has become a new 'mediterranean' sea, and obscure islands like Wake and the Cocos Islands have become important as intermediate landing-places.

Many other specialized uses of aircraft illustrate both the geographical and global aspects of this topic: in exploration—internationally organized as in Antarctica or less spectacularly in Canada—for topographical and land-use surveying through highly developed aerial photography, for the mapping of geology and prospecting by gravimetric and radio-active methods, for soil

surveys as in Mesopotamia, for farming by dusting with insecticides, and in forestry for fire-fighting.

Having in mind the new concepts, the teaching of the geography of India might need some modification and reorientation. It may be desirable to give less attention to the regional aspects of the subject and more to the position of the country with regard to the import of raw materials, the relative significance of home-produced and foreign food supplies, India's place in the world as a manufacturing nation (and, incidentally, whether she has any advantages apart from the skill of her people and the capacity to work), world transport routes and India's connexion with them, and India's relationships with Commonwealth countries, Western Europe, and the United States.

A normal lesson on Northern China might begin with a sample study on a typical farmer near Peking and describe his work through the seasons, the crops he grows, method of irrigation, the relationship of his work to the soil, drainage and climate, his farmhouse. The new aspect could be introduced by mentioning the tiny size of the farm, which results from the large population of China and the pressure on the land, and the resulting low standards of nutrition. These are the aspects which have global significance. If the lesson takes the form of a comparison between conditions in North and South China the work can easily be oriented to include these fundamental facts. Or, pupils may be led to make fundamental discoveries for themselves by giving them data (or letting them look it up) such as total population, total area of cultivated land, rate of increase of the population, production of main food-crops, consumption per head, expectation of life, and the facts shown in diagrams. Even if the pupils do not make them they are useful and effective teaching aids for a teacher to make. (See Figure 2.)

Foundation for Special Study

To an increasing degree, the higher education taken by students includes some 'special study', usually of a vocational kind, such as engineering or commerce, catering or building, and the geography teacher is in a particularly good position to make his special contribution especially if he stresses the 'global' aspects. All technical subjects have important geographical aspects, and it is vital that future engineers, for example, should have a good background knowledge of the needs and character of the industry which they wish to enter. Much of this background is geographical, and for such pupils the later part of the geography course, while remaining true geography, ought to be

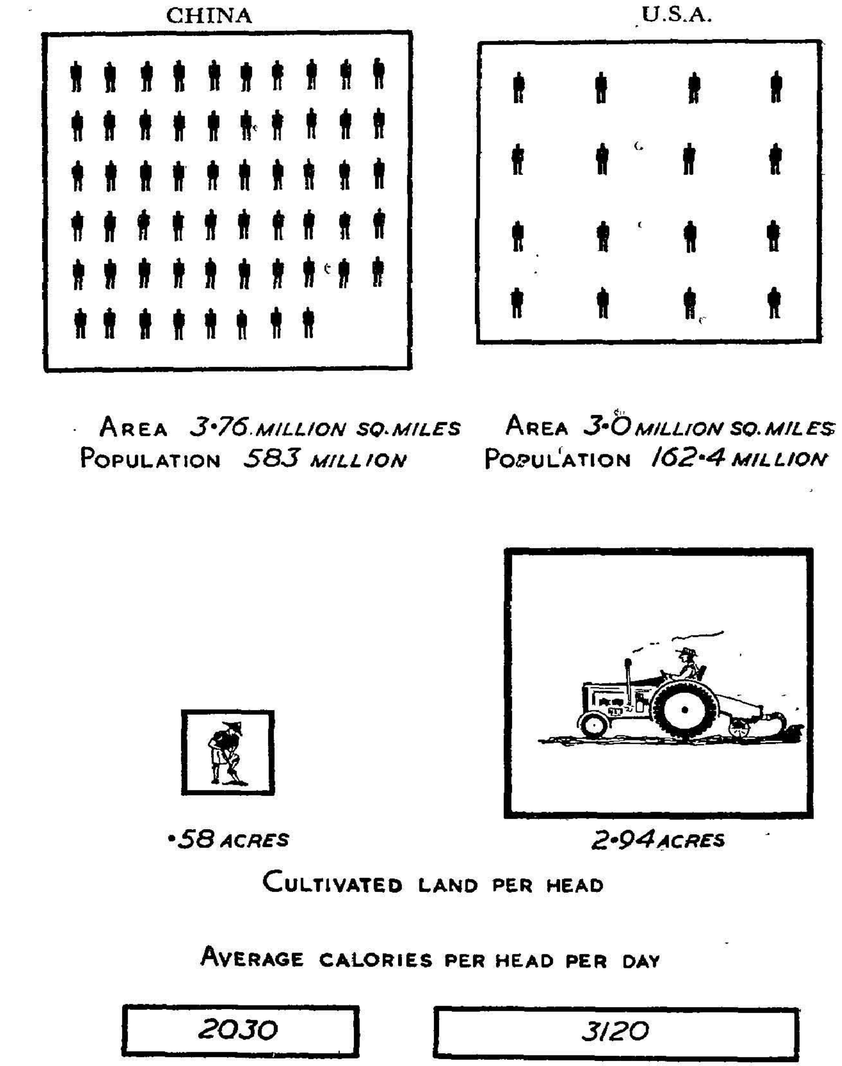


Fig. 2. COMPARATIVE DIAGRAMS

slanted towards the field of employment which the pupil expects to enter, and which determines his 'special study' after school.

Within any set syllabus, as every good teacher knows, there is room for much incidental teaching, teaching 'on the side', which often has significance far beyond the time spent on it; in fact it often does more good than material on the syllabus because it stimulates interest and thought. As suggested above, it should

be quite possible to introduce into the normal regional work aspects which are also of global importance.

Underlying the views expressed in this article has run the conception that geography is a worth-while subject pre-eminently suited as a medium of real education for girls and boys of all ages and abilities. It is flexible, and adaptable to changing needs, and, resting on a basis of sound principles, it can provide a vehicle for the exercise of logical thought. Above all the subject provides a valuable body of knowledge which, well taught, can interest the pupil and prepare him to become a responsible citizen in a rapidly changing world.

The world today has become so complex, and events follow one another with such bewildering rapidity, that the ordinary person tends to withdraw, and takes the negative attitude that the professionals, the politicians, the scientists can look after things. It cannot be stressed too strongly that all modern developments are the result of human effort, and that man *is* master of his fate if only he will not abdicate from his responsibilities. Every individual should realize that in one way or another, he can exert some influence on the course of events for good or ill, and the geography teacher is in a favourable position to disseminate this important concept.

The Teacher

As in all discussion of educational topics, here we are brought back to the fundamental aspect—it all depends on the teacher. The quality of education depends not chiefly on equipment, buildings, or facilities, but on the quality of the individual teachers. Particularly heavy demands are made upon the teacher of geography. He needs to have a firm grasp of the basic principles of the subject and a sound body of knowledge. He needs to be widely read, especially in travel literature, and to be physically active so as to undertake field-work. He has to adopt all possible means to keep himself up to date. Above all he must be a person of wide interest, for much of the success of his teaching depends on his ability to handle material from related subjects and to integrate it and distil it for the benefit of his pupils.

Thus portrayed, the geography teacher sounds a paragon. It is a commentary on the high level of much of the geography teaching today that there are such people.

E. W. H. Briault and D. W. Shave

(This article is adapted from the forthcoming book *Geography In and Out of School* by E. W. H. Briault and D. W. Shave, by permission of George G. Harrap & Co. Ltd, the Publishers.)

Book Review

B. N. PHILLIPS, R. L. DUKE, and M. V. DEVAULT: *Psychology at Work in the Elementary School Classroom* (Harper, 1960), Demy 8vo, pp. xxiv+396, $5.

In his introduction to this book the editor says that the high qualifications of those who produced it make it of great value to all those concerned with the education of elementary school children. In the book there is a lot of interesting information, but much of it is, for the layman and the average teacher, obscured by a fog of statistics and technical language which is almost entirely unrelieved by attractiveness of style.

After reading through twenty-five pages of appetite-whetting introductions, prefaces and orientations the reader emerges into a section headed 'The Group in Classroom Organization'. A number of research studies are described in some detail. The purpose, method and results of the research are given. The kind of paragraph that is likely to overawe anybody but a specialist is: 'It may be noted that on the basis of the null hypothesis of no correlation, ar=0.218; thus significance at 5 per cent level corresponds to r=0.427. The statement of significance quoted for each r above was based upon the calculation of the standard error for that particular r.' Nevertheless, the descriptions of the research methods and the conclusions are interesting.

It was found that groups of high ability were the most friendly and that the efficiency of a group, as indicated by assessment of quality of work, co-operation and friendliness, is dependent upon the ability of members of the group and not upon their assertiveness. One of the implications of the findings was that competition does not necessarily have undesirable effects on inter-personal relationships.

The first part of the book, which deals with 'Classroom Organization and Interpersonal Relationship', includes sections on the judgement of teachers by students, the effect on learning of personal social anxiety, and the effect which the personality of a teacher has on his evaluation of student behaviour.

In the second part of the book, headed 'Pupil Behaviour and Learning', there are a number of research studies quoted which deal with the motivation of pupils. A section on 'Planning and Organizing Learning Tasks' contains one particularly illuminating piece of research on teaching the concept of area in geometry. In the final two sections, 'Providing Appropriate Pupil Activity', 'Assessing, Evaluating and Redirecting Learning', the research studies upon the effect of 'Teaching Procedures on Group Attention and Thought Processes in Lectures and Discussions' are valuable. We can conclude that the lecture method at universities is not ineffective but that frequent testing results in better achievement.

For the reader who is prepared not to be put off by specialist jargon and statistics there is much of value in this collection of research studies and in the conclusions that are drawn from them.

Printed by K. A. Korula at the Wesley Press, Mysore City
and published by John Brown, Oxford University Press, Bombay 1